



Claims

Having described my invention in such terms as to enable those skilled in the art to understand and practice it, and having identified the presently preferred embodiments thereof, I claim:

1. A rotary brush assembly powered by a traction vehicle having an auxiliary hydraulic system, a forward and reverse direction of travel empowering said assembly to sweep horizontal, vertical and overhead surfaces, in close proximity of protruding objects, comprising:
 - a) a mounting frame;
 - b) a brush support frame;
 - c) a rotary brush operatively connected to the brush support frame;
 - d) a yaw pivoting joint permitting rotation of the frame about a first axis substantially perpendicular to the ground;
 - e) a gutter broom assembly operatively connected to the brush support frame;
 - f) a brush cover;
2. The brush assembly of claim 1 wherein the rotary brush rotates about an axis of rotation substantially parallel to the ground when the brush support frame is in its centered position.
3. The brush assembly of claim 1 wherein the rotary brush having a center shaft rotating about axis of claim 2, have a first end and a second end, said first end coupled to a hydraulic motor.
4. The brush assembly of claim 1 wherein the gutter broom rotates about an axis of rotation substantially perpendicular to the ground when in the operating position, said axis substantially parallel to the ground when in the rest position.
5. The brush assembly of claim 1 wherein the brush assembly is mounted substantially below an implement arm.
6. A mechanism for attaching a rotary brush assembly to a traction vehicle comprising:
 - a) an implement arm extending from the traction vehicle;
 - b) a controlling surface located at an end of the implement arm;
 - c) a pivot joint located at the end of the implement arm about which the controlling

surface rotates, the pivot joint having an axis of rotation resulting in a pitch motion of said controlling surface;

d) a means to attach said controlling surface to said mounting frame of claim 1, said controlling surface is controlled by the operator;

7. The mounting frame of claim 1, referenced in the operating position, comprising:

a) main beam, said beam having a top side, bottom side, a right side, a left side, a front and rear;

8. The mechanism of claim 5 wherein said controlling surface is maintained in a position substantially parallel with the ground when said brush is engaged in sweeping horizontal surfaces.

9. The yaw pivoting joint of claim 1 comprising:

a) an inner bushing, said bushing attached to the front, underside of said beam of claim 7;

b) a rear hydraulic cylinder mount, said mount attached to the rear, underside of said beam of claim 7;

c) an outer bushing, said bushing cut to a predetermined width, having an inside diameter such that said outer bushing will tightly fit over the outside diameter of said inner bushing;

d) a front hydraulic cylinder mount, said mount attached to said outer bushing.

e) a hydraulic cylinder, said cylinder having a rod end and a tube end, said rod end attached to said front cylinder mount and said tube end attached to rear cylinder mount.

10. The brush support frame of claim 1 comprising:

a) a main beam running perpendicular to the forward direction of travel, having first and second ends;

b) the outer bushing of claim 7, said bushing attached to the top side and centered longitudinally as well as crosswise on said main beam;

c) a bearing support member, said member having a front side, a back side, first and second ends, said first end is fastened to the bottom side first end of said main beam, protruding downward, at right angles from said main beam;

a) said support member having a top mounting bushing, middle mounting bushing, and bottom mounting bushing, for the installation of said gutter broom assembly of claim 1.

b) said bushings are fastened to said support member, vertically spaced, protruding slightly through the front side and back side of said support member.

d) a bearing pad, said pad fastened to the second end of said bearing support member.

- e) a motor support member, said member having first and second ends, said first end is fastened to the bottom side at second end of said main beam, protruding downward at right angles from said main beam;
- f) a motor mount, said mount fastened to the second end of said motor support member;
- g) a pair of front brush cover members, said cover members having first and second ends, said ends being aligned, first ends fastened to the front sides of said bearing support member and said motor support member respectively; said cover members protrude forward at right angles from said bearing support member, and said motor support members;
- h) a front brush cover cross member, said cross member fastened to said second ends of said front cover members;
- i) a front brush cover slot member, said member longitudinally attached to said front cross member.
- j) a front slot, said slot created by attaching said slot member to said front cross member
- k) a pair of rear brush cover members, said cover members having first and second ends, said ends being aligned, said first ends fastened to the rear sides of said bearing support member and said motor support member respectively, said cover members protrude downward and away from bearing support member and said motor support member respectively at an angle approximating 58 degrees;
- l) a rear brush cover cross member, said cross member fastened to second ends of said rear cover members;
- m) a pair of gusset mounts, said mounts are fastened to the ends of said rear cross member;
- n) a pair of skid shoes, said shoes attach to said mounts;
- o) a rear brush cover slot member, said member longitudinally attached to said rear cross member;
- p) a rear slot, said slot created by attaching said slot member to said front cross member;
- q) a front cover retainer, said retainer installed at the longitudinal center and the crosswise center of said front slot member, pinning said slot member, said cover and said front cross member together;
- r) a rear cover retainer, said retainer installed at the longitudinal center and the crosswise center of said rear slot member, pinning said slot member, said cover and said front cross member together;

11. The brush cover of claim 1, said cover made from material having elasticity, said cover having a front edge, a rear edge, a left edge and a right edge, said front edge fitted into said front slot and said rear edge fitted into said rear slot.

12. A means enabling the operator to control the rotation of both said brush and said yaw pivot joint of claim 1, comprising:

a) a circuit selector valve, said valve operatively connected to auxiliary hydraulic system of claim 1, wherein:

- a) said valve is mounted on the top side toward the front of beam of claim 6;
- b) said valve is operatively connected to motor of claim 3 and cylinder of claim 9;
- c) the oil flowing from auxiliary hydraulic system of claim 1 is operator controlled;
- d) said valve having a first and second positions;
- e) said valve is manually actuated;
- f) the first position of said valve, oil is supplied to motor of claim 3;
- g) the second position of said valve, oil is diverted to cylinder of claim 9.

13. The gutter broom assembly of claim 1 comprising:

a) a front and rear support plate, said plates having: a first end, and a second end, including:

- a) first, second, and third attachment holes, said holes located on first end of said plate, said holes attach the gutter broom assembly of claim 1 to brush support frame of claim 1
second and third of said holes being vertically spaced and aligned;
first of said holes are aligned and at right angles of said second holes;
second of said holes having a location relative to third of said holes, commensurate with the vertical spacing of said middle bushing of claim 10 relative to said bottom bushing of claim 10;
first of said holes having a location relative to second of said holes, commensurate with the vertical spacing of said top bushing of claim 10 relative to said middle bushing of claim 10;

b) gearbox mounting holes, said holes are aligned and located on said second end of said plates;

b) a right angle gearbox, said gearbox having a right side, a left side, a front side, a back sided, a top side and bottom side, comprising:

- a) a specified gear ratio;

- b) front side mounting holes;
- c) a rear side mounting holes, said front side mounting holes align with said rear side mounting holes;
- e) a input shaft;
- f) a output shaft;
- c) a middle retaining pin, said retaining pin fills the second of said attachment holes, passing through said middle bushing of claim 10 creating a roll axis of rotation, said axis permitting a roll movement of gutterbroom assembly of claim 1;
- d) a top retaining pin, said retaining pin fills the first of said holes passing through said top bushing of claim 10, said retaining pin in cooperation with said middle retaining pin locks gutterbroom assembly of claim 1 in it's rest position.
- e) a bottom retaining pin, said retaining pin fills the third of said holes passing through said bottom bushing of claim 10, said retaining pin in cooperation with said middle retaining pin locks gutterbroom assembly of claim 1 in its work position.
- f) a means by which to convey rotational energy from second end of claim 3 to said input shaft, said means comprising:
 - a) shear pin
 - b) a square drive hub, said drive hub fixed to said second end by means of said shear pin;
 - c) a cup, said cup having four equal sides, an open end and a closed end, said cup capable of tightly fitting over said drive hub;
 - d) a drive shaft, said drive shaft having a first and second end, said first end attached to said cup;
 - e) a universal joint, having first and second ends, said first end attached to said second end of said drive shaft, said second end of joint attached to said gearbox;
 - g) backing plate, said backing plate attached to said output shaft;
 - h) a gutter broom brush, said gutter broom brush attached to said backing plate;